

CNAAs reports increase in course submissions

by David Hencke

An enormous increase in the number of courses put forward for validation between 1973 and 1975 is disclosed in the latest annual report of the Council for National Academic Awards.

It shows that proposals put to the CNAAs have risen from 502 in 1973 to 944 in 1975, the largest increase in the CNAAs' 10-year history.

Nearly half of the proposals (436) put forward in 1975 were renewals, revisions and resubmissions of courses.

The large increase in resubmissions is partly due to 143 renewals in art and design. But there are also large increases in humanities, social sciences, mathematics and computing.

The rise in course proposals is paralleled by a 25.8 per cent increase in students registered on CNAAs courses, from 61,602 in 1974 to 77,548 last year.

The report comments: "The rapid growth in courses offered under CNAAs auspices and in the number of students registered on them is evidence of the success of one of the best ideas in British education."

"In a year when the nation suffered from the effects of recession and there was contraction in most spheres of activity the council's work was in even greater demand."

Its influence in higher education in the United Kingdom strengthened and the uniqueness of its contribution is now recognized well beyond these shores.

Details of new course developments show that the number of first-degree courses is 853 compared with 775 in 1974. The rapid growth in arts and social studies courses has slowed a little with a 14 per cent increase in the number of courses and a 20 per cent increase in first-year student enrolments compared with 21 per cent in 1974.

First-year student enrolments in science technology have increased by 16 per cent compared with 14 per cent in 1974. This number of art and design students has increased by 8 per cent, although the number of new courses is only 2 per cent up.

A large increase in education courses (83 per cent: 15 new

courses) and students (77 per cent) reflects the growing interest of the CNAAs in teacher education.

Part-time first degrees have also grown from 91 courses in 1974 to 108 last year. The number of students enrolled on part-time degree courses has also increased from 3,823 to 4,649. Students on Diploma in Higher Courses numbered 591 in 1975.

Master's degree courses now total 97, including 12 in arts and social studies.

Although the enrolments of sandwich-degree students has risen by 2,432, proportionately their numbers on CNAAs courses continues to fall, from 35 per cent in 1974 to 32 per cent last year.

Full-time degree student proportions have risen from 59 per cent to 62 per cent. The proportion of part-time students on degree courses has remained static at 6 per cent.

The growth pattern in the CNAAs reflects larger proportions of students on modular degree programmes and on teacher education courses. Although there have been increases in science, technology, art and design students; the proportion of students on these courses has actually fallen from 45 per cent to 42 per cent (science and technology) and from 16 to 15 per cent (art and design).

The number of academics on CNAAs committees, subject boards and panels is growing enormously with nearly 30 pages of the 70-page report devoted to lists of their names. There are now 72 different committees with 129 academic members, enough to staff two large polytechnics.

The finances of the CNAAs, a self-supporting body, appear to be getting better after a loss of £250,000. Its plan is to break even this year and establish a modest reserve by next April.

The report also discloses that the Duke of Edinburgh is retiring from the presidency of the council at the end of the year. His place will be taken by Prince Charles, whose installation ceremony will depend on when his present commitments to the Royal Navy are completed.

The Council for National Academic Awards Annual Report 1974-75 is available from the CNAAs, 354, Gray's Inn Road, London WC1X 8BP.

1,400 postgrad places left empty

Postgraduate teacher training courses in universities, polytechnics and colleges of education were undersubscribed by more than 1,400 places last year, according to returns from the institutions.

The figures show that although 11,700 places were allocated by the Department of Education and Science just over 10,300 students were admitted. In 1976 the DES target has been increased slightly in the universities to 5,000 places while the target for polytechnics and colleges has been reduced from 6,893 to 5,388.

There is a considerable variation between institutions among the number of students admitted and the figures produced by colleges and polytechnics show that DES target figures are often ignored.

Among colleges and polytechnics exceeding the DES target were Coventry (17 extra places); Redland College (24); Ilminster (16); Edge Hill (14); Goldsmiths (23); and Manchester Polytechnic (23).

Those failing to reach DES targets by a wide margin included Crewe and Alsager and Macclesfield (103 empty places); Kingston-upon-Hull (35); Chester (41); Borough Road (34); Stockwell (56); Padgate (54); Northern Counties (54); Loughborough (55); Doncaster (56); and Bognor Regis (45).

Universities tended to follow their target figures very closely with only Exeter (20 places) and the University of London Institute (21 places) exceeding their targets by a large margin. Only Leeds (26) and Reading (23) failed to reach their targets by similar margins.

A number of institutions admit very small numbers of students to their postgraduate certificate in education courses. Examples of these include Hereford which admitted seven students last year; Sunderland Polytechnic which admitted seven; Battersea College of Education three; Shoreditch College three; Glamorgan Polytechnic five; and Bishop Cleeve, Dorby, eight.

The Sunderland Polytechnic course has since been threatened with closure by the DES and Hereford stops admitting students on the PGCE in September.

Poly plans part time politics

Part-time students will be able to study for a degree in government at Birmingham Polytechnic from this September.

The course is the fourth part-time degree to be introduced at the polytechnic. Others are in electrical engineering, mechanical engineering and business studies.

The Government course is in two parts. The first will normally be completed by full-time students in the one year and the second consists of eight subjects and takes up the second and third years of a full-time course. It can be spread over an indefinite period for part-timers.

The polytechnic is likely to expand its part-time scheme in the next few years. At present it has 6,000 students enrolled on an appropriate entry qualifications are coming forward and a trend towards part-time work is developing successfully.

A BA in government is also being offered as a full-time course in the department of economics and social science for the first time this year. It has grown from the politics degree first introduced in 1971. The department has taught politics and public administration for 30 years.

Town halls given 10 days to prune their overspending

by Stephen Cohen

Local authorities have 10 days to bring their planned spending budgets for 1976/77 into line with the Government's standstill policy. Mr Shore, Environment Secretary, told local council leaders this week that their efforts to reduce up to £450m overspending was not good enough. The councils now expect to overspend by £250m.

Education was £135m over budget when the Government asked the authorities to revise their estimates earlier this summer. The new figure presented to Mr Shore on Tuesday was £70m.

The revised estimates were still too high, he said. Although he appreciated the serious efforts local authorities had made to bring down their projected spending "at the end of the year we are still presented in public expenditure terms with a projected excess of £250m". This was too large a margin, he said.

The authorities dispute the Government's figures and say that they have to spend more because of its policies, and also because Whitehall has made blunders in the calculations. In education it is argued that an account has been taken of the effects of unemployment.

Curriculum services cost more to run when there is a high number of teenagers out of work. More young people are staying at school rather than entering the labour force. But to have books and paper cost money. And more students are qualifying for higher grants because their parents are out of work and do not reach the starting point of the means test scale for parental contributions.

There is also a dispute about the cost of teachers' salaries. The Department of Education and Science reckon that the authorities are overspending by up to £50m but Mr Carleton Hetherington, secretary of the Association of County Councils, said this was incorrect because the department used a different system for calculating teachers' salaries.

Mr Shore, who was flanked by Mr Mulley, the Education Secretary, at the meeting, said he knew of the expected overspend due to a difference of views between the two sides. He accepted that it was not easy to get current estimates back on target but next year's money Government would succeed in so doing.

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Oxbridge beaten by polys in jobs popularity stakes

School leavers are unlikely to choose Oxford, Cambridge and the new universities because of their usefulness in getting jobs.

A report by the Department of Education and Science on attitudes to education and science on attitudes to education and science found that over two thirds of respondents intending to enter higher education rated the usefulness of the course for a job and the reputation of the department or institution as important.

But universities which were formerly colleges of advanced technology, polytechnics and colleges of education were much more likely to be chosen for this reason.

The report, which described the results of two days of research conducted by the DES in 1975, was published this week. Extracts from the report appeared in the February 27 issue of *The Times*.

The surveys were initiated in 1975 by the former Minister of State for Higher Education, Lord Crowther-Hunt, because the annual growth in the number of school leavers with A levels since 1970 had been consistently less than forecast.

£1,600 for pianists

Thirty-five young pianists will take part in the British Liszt piano competition to be held at the University of Surrey at the end of August.

The performances are open to the public and will form part of the university's tenth anniversary celebrations. The prize is restricted to pianists of British nationality under the age of 30.

Prizes totalling £1,600 are being offered and the winners will be invited to take part in the European Liszt piano competition in Hungary in 1977.

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MPs attack university's £1m computer firm loss

by David Dillman

Sharp criticism of both the University Grants Committee and the university's handling of commercially-related computer operations is made in a report published yesterday by the House of Commons Committee on Public Accounts.

The university is criticized for its role in the affairs of London University Computer Services Ltd (LUCS), whose trading losses in the three years up to 1974 added up to £1,000,000, according to the committee, force the meeting, said he knew of the expected overspend due to a difference of views between the two sides. He accepted that it was not easy to get current estimates back on target but next year's money Government would succeed in so doing.

The committee also criticizes the university for its apparent lack of interest in the use of the university's funds for substantial loans to the company. It says there is a clear distinction between commercial activities based on funds derived from UGC recurrent grants, which are linked directly to a university's academic functions, and those which have little or no relevance in such functions.

After three years' financial difficulties, during which the company was kept going by an increasing bank overdraft and advances from university funds, LUCS's liabilities at the end of 1974 exceeded its assets by about £1,400,000, with £611,000 due to its bankers and £565,000 due to the university.

A scheme was arranged under which repayment of the company's debts was deferred, and in the following year a profit of £45,000 was made. However, according to the committee: "The university was still left with no return on the loan to the company."

The Fifth Report from the Committee of Public Accounts, HMSO £3.45.

University of London and the University Grants Committee over their handling of commercially-related computer operations is made in a report published yesterday by the House of Commons Committee on Public Accounts.

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University and poly link on postgraduate 'first'

by Frances Gibb

City University, Hatfield Polytechnic and Surrey University are combining to produce Britain's first postgraduate diploma course in teaching and learning. The course is for teachers in higher education, whose students are taking first degree courses.

It starts in January with about 24 enrolments and will run for one day a week over five terms, with the next intake in two years' time. The idea for a joint course arose in 1971 when the University Grants Committee invited claims for educational development grants which, if possible, would be inter-university and inter-disciplinary.

Surrey's Institute of Educational Technology and City's Centre for Educational Technology, each received a sum. A year later, the two heads of educational technology, Professor Lewis Elton at Surrey and Mr L. P. Evans at City, decided to put in a joint claim for developing a diploma in teaching and learning in higher education.

Shortly afterwards, Mr Evans explained, the UGC reserves were exhausted but it was felt worth while to continue the project and to involve the public sector since many teachers taking courses would be from polytechnics. Hatfield, as links, was chosen, and Mr Tony Tribe, head of education there, invited to take part in developing the course.

The course beginning next year has four main areas. The first is learning and skills of teaching and development, including choice and the process of learning and the design and appropriate use of educational media.

The second will be the curriculum and its development, which will include course aims and design, selection of course content, assessment of students and evaluation of courses.

The third will cover the organization of higher education in Britain, governance of higher education institutions, finance and law, personnel and office management and recruitment of staff and students.

The fourth will be personal aspects of teachers' professional development, an appreciation of the teacher's role, conflicts of roles in higher education, and student counselling.

There will also be four residential workshops, lasting two to three days each, which will be held at Hatfield and Surrey in the first year. These will be on the teacher's role, the conduct of meetings and interviewing.

The three institutions complement one another's work. City provides part-time in-service courses for staff and short courses on the organization of higher education. Hatfield runs part-time in-service courses for teachers and Surrey Institute runs intensive short courses on teaching and learning in higher education.

Nevertheless, getting the syllabus agreed by all three senates and academic boards was no mean feat, according to Mr Evans.

Newcastle architects and engineers combine

A four year degree course in Building Services Engineering starting at Newcastle upon Tyne Polytechnic in September is a new cooperative venture between university architects and engineers. The polytechnic is building engineering students.

The course will train students to cater for the nation's demands for higher standards of comfort and the need for better use of energy. They will specialise in heating, ventilation, acoustics, lighting and sound.

The degree includes three six-month sandwich courses in industry and in the final year a complete design project undertaken with students from Newcastle University who will provide the architectural design.



Film of violence on the terraces to be analysed.

OU increases television use in social psychology course

Among new courses to be launched by the Open University are an undergraduate course in social psychology this year and post-experience courses in statistics and the history of mathematics in 1977.

Films of football violence and conversation at parties provide material for analysis in the one year social psychology course, which began in February. It forms one sixth of the work needed for a BA degree.

Even by OU standards, the course is unusual for the extent of television used. There are 16 television and 16 radio programmes which serve to illustrate aspects of social behaviour difficult to convey in print.

The programme on football violence, for example, examines the state of research so far on the subject and includes news film and a sequence shot on the terraces of a second division football ground.

The one year post-experience course in statistics, "Statistics—An Interdisciplinary Approach", will examine techniques and provide

Taking care of the redundant

A development course for redundant training officers, sponsored by the Government's Training Services Agency and the European Social Fund, has started at Slough College of Higher Education.

The 12-week modular advanced course has been designed to improve and broaden the skills of temporarily unemployed training officers so that they can re-enter their field with up-to-date knowledge. It has a high element of practical work, including extensive case studies and an in-company project spread over three weeks.

Modules offered cover communication and social skills, problem solving, data collection, industrial relations and manpower planning techniques.

The course, organised and run by the training technology division of the college's faculty of management, is already well under way, and Mr John Butch, the course lecturer, said this week that two students had already obtained promises of work.

He believed that by the time the course ended next month several more would have been placed in jobs.

A similar course is now being planned at Huddersfield Polytechnic for the autumn. The estimated cost of the two courses is £26,000, half to be met by the European Social Fund.

The present trainees receive an allowance of £31 per week through the Training Services Agency's Training Opportunities Scheme.

students with a basic introduction to theory.

Those with a non-mathematical background will not be asked to master mathematical techniques but helped to appreciate what is happening in the mathematical model.

A second new course within the post-experience programme will be "History of Mathematics", which will examine the way mathematics has evolved and look at the part it has played in general cultural history.

Students will study a number of concepts and techniques. Special emphasis will be put on less advanced topics such as numbers, geometry, elementary calculus and coordinate geometry. Although the course is particularly suited for mathematics teachers at all levels, a special option will be provided for background.

The university's post-experience syllabus is designed for adults who want to keep abreast of developments in their own field or broaden their interest into new areas. The programme will have 21 subjects.

Hotel training recipe

The Hotel and Catering Industry Training Board has outlined its plans for the next five years in a planning document just published. It gives a new priority to the training of trainers and to the development of training aids.

The five year plan for 1976-81 gives the board's overall aim as assisting the industry in developing and implementing training relevant to its short and long term operational needs. But it adds that standards in key areas such as in production, industrial relations and personnel management.

"The board will continue to encourage larger employers to make their own courses for in-structure and on the job training. The development of systematic training has demonstrated a need for them and the board intends to develop course material to meet this need," says the planning document.

The board also intends to publish a special register of aids to select the best material to support their training activities.

Sandwich course students are pinpointed in the document, to need better training. The board says available to them during industrial training is properly programmed, effectively executed and of an adequate standard.

Warwick conflict over student unemployment

by Sue Reid

Almost half the graduates interviewed in a survey at Warwick University this summer had failed to find permanent employment by June, according to the students' union.

The union says that 49 per cent of 311 third year undergraduates interviewed two weeks before their finals in June had not found work and three quarters believed they would still be unemployed in October.

This week the university rejected the students' survey as unrepresentative. It produced contradictory figures which showed that of 224 third year students interviewed after the examinations in late July only 58, or about 25 per cent of the sample, were still seeking work.

The controversial union survey, involving one quarter of the 1976 graduates, revealed that 25 per cent had found permanent employment and a further 25 per cent intended to take up postgraduate places. But work another 78 had not found employment, 43 per cent in science and 49 per cent in social science were still trying to find jobs.

An alarming 74 per cent of those without promises of work thought it likely that they would have to take employment that did not require a university qualification, says the union. It points out that this represents 37 per cent of the total number interviewed.

Twenty-five per cent of the students interviewed who had found work before they left said their new jobs did not require a degree-level qualification, 19 per cent claimed they would have preferred different employment and 12 per cent said their new jobs could not be regarded as the start of a career.

Newly qualified graduates could take up postgraduate study, but suitable jobs. The union says the first draft of the changes it plans to make if the long-awaited private Bill to increase its statutory powers is successfully promoted in Parliament this November.

The union says the new statute, which would enable it to resolve by its own efforts the difficulties which, as far back as 1961, the Robbins committee suggested should be the subject of an independent inquiry.

He said that under the Bill all the existing statutes would be repealed and replaced by one, which would be subject to a statutory veto. After the Bill became law, all changes in statutes including those outlined in the latest report, would have to follow the procedures laid down in the Bill and observe the special safeguards provided.

The new statute now proposed will alter the composition of the university court, senate and academic council. They will also allow for the vice-chancellor to be the university's salaried and administrative head with a possible term of office of eight years. At present he is the academic head.

The principal will be demoted from the position of administrative head to senior administrative officer with responsibility to the vice-chancellor.

The growing tendency for students to study away from their homes may have to be halted in the interests of economy, says the Association of Meeting and Hospitality Authorities. At a meeting last week the AMA's education committee agreed to initiate discussions with the Council of Local Education Authorities (CLEA) and other interested bodies on how to encourage more higher education students to live at home.

The committee's chairman, Councillor Peter Horton, said afterwards: "The proportion of home-based students has been declining consistently. In 1974 only some 17 per cent of university students lived at home compared with almost 26 per cent in 1960 and more than 43 per cent in 1950."

"In normal times it might be desirable to encourage students to study away from home in the broad interests of their personal and educational development, but in the present harsh economic climate it may be necessary to halt the trend."

Students who study away from home increase the costs for their home local authorities which have to pay higher grants, and they often have an adverse impact on the housing situation in the area in which they study.

Short-term devices to mitigate the effects of unemployment are being considered by the Government and the teacher unions.

The training services agency could be asked to finance courses on which existing or newly qualified teachers could return to full-time work. This would also create temporary vacancies in part-time schools which new teachers could fill.

The committee emphasizes that all these proposals are at an exploratory stage, and will require careful working out with both the Government and the teacher unions.

The proposed changes in the examination system would have serious consequences on the education of technicians, scientists, accountants, as well as engineers, Mr Chisholm claimed. "The country is going to be disadvantaged in all these fields and the national consequences are going to be grave."

The Committee of the Engineering Professors' Conference has asked Mr Mulley to meet a deputation from the conference before making a decision on the Schools Council's recommendations.

The Schools Council recommended that the General Certificate of Education Ordinary level and Certificate of Secondary Examination should be replaced by a common 16-plus examination for pupils throughout the ability range.

First draft of London's statute changes released

by Sue Reid

London University has released a first draft of the changes it plans to make if the long-awaited private Bill to increase its statutory powers is successfully promoted in Parliament this November.

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AMA turning against students living away from home

by Sue Reid

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Governors held captive in office

by Sue Reid

Four students at North East London Polytechnic have been suspended for staging an hour-long occupation of the director's office and holding four polytechnic staff and three governors captive.

The students were suspended immediately after the occupation in June by Dr George Brown, director of the polytechnic. They were called to a disciplinary hearing in London a fortnight later but the case was adjourned as the students' request, until further notice.

All four students, suspended until the polytechnic's standing disciplinary committee will sit again at the beginning of next term when the student will be charged with an offence of disrupting the teaching and learning process.

The polytechnic claims that the controversial sit-in happened during a special committee meeting which was considering if action should be taken against students involved in an earlier month-long occupation of the Barking site in protest over teacher unemployment.

A group of 20 students broke into the meeting and held the directors, governors, a secretary and committee clerk in the room for one hour. The police were called but later left the campus after the students, including the three union representatives, promised to release their captives.

Mr George Seabrooke, deputy director of the polytechnic, said this week that four students—Mr Andy Strouthous, the union president, Mr Ian Miller, Mr Geoff Fyler and Mr Ian Robinson—were legally represented. They would be allowed to enrol at the polytechnic in September before the hearing and therefore be eligible to claim their grants.

He added that the polytechnic would use the time until October to draw up more clearly the charges against the four students. They were, he admitted, the four students involved in the occupation who could be named and readily identified.

But the students deny the charges against them. Mr Strouthous has said that no violence was used or threatened during the occupation. He claims that the governors were attempting to change the students' union constitution during the meeting but this was prevented by forcing the committee to adjourn.

Mr Strouthous has been told by the polytechnic that his suspension must continue although he is taking a sabbatical year as union president. He has been banned from attending governors' meetings or those of the academic board and other committees until further notice.

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16-plus 'threat to quality of engineers' Scottish sixth-form exam claimed to be a failure

by Frances Hill

The Scottish Certificate of Sixth Year Studies, established in 1968, has failed to achieve its aims according to *The Scottish Sixth*, a National Foundation for Educational Research publication.

The certificate did not appear to have helped sixth-formers improve their independent study, and had done nothing to reduce specialisation in the curriculum, claim the authors of the publication, Andrew McPherson and Guy Neave, of the Centre for Educational Sociology at Edinburgh University. Neither has it catered for "more practical" as well as "more academic" interests.

If the certificate had enhanced pupils' educational maturity and capacity for independent study, as it was intended to do, those holding the certificate might have been expected to do better during their first year at university than those without it, they argue.

In fact, first-year students at Edinburgh University with the certificate did not perform better, on average, than those who had not, except in European history.

The certificate had done nothing to reduce, and might well have increased, specialisation in the curriculum, adding to the number of examinations taken by sixth-year pupils "with few measurable, compensating pedagogic advantages".

The claim that the certificate had failed to cater for pupils with "more practical" interests was proved by nine out of 10 school leavers taking CSYS science subjects, and seven out of 10 taking

French and German, immediately embarking on degree courses. Although only 65 per cent taking history, 64 per cent taking English and 55 per cent taking geography entered degree courses on leaving school, it would be straining credulity to argue that the lower percentages starting degree-level or academic courses from these three subjects resulted from the greater provision made in their curricula for pupils of 'practical' interests.

It was more likely that the figures reflected English, history and geography counting for less as university entrance qualifications than science and language subjects.

Contrary to the stated purposes of the Scottish Education Department and the Examination Board, university students with the certificate were taking or had taken a CSYS course as a criterion of selection, the authors claim.

The practice was less common in the sciences than arts, "but only because the pressure of places in science and the resulting high level of SCE achievement are both lower than in non-science subjects".

The authors strongly imply that the proposed aims for the certificate were naive and unrealistic. Intellectual independence and conventional forms of examination always tended to be antagonistic, they suggest. A new sixth-form examination was bound to be used by universities as an extra means of selection.

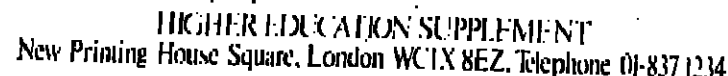
It was also unrealistic to suppose that "permanent results were to be had from a nine months' change in the teaching methods to which sixth year pupils were to be exposed".

The Scottish Sixth by Andrew McPherson and Guy Neave, NFER Publishing Company.

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The Government is to be asked to provide more than \$65m (£7m) for the construction of a new engineering building and related infrastructure for the development of the University of Hong Kong. The new building is one of the recommendations made in a report on the university's 16-year development plan compiled by Dr S. E. T. Cusdin, consultant of the London architectural firm of Cusdin, Burden and



Today, no one, not even the Labour Party, seems to be a Fabian any more. Indeed the Government's explicit strategy is to encourage the development of the private sector by reinining back public expenditure on which graduates have become increasingly dependent for employment. This is a danger that universities and colleges, tuned as they are to satisfy the needs of a prosperous and progressive social and economic society, will find it difficult to resist to the less enticing prospect of contemporary Britain. The important employment will be an indication of their success in falling.

Implications of the new types of development strategy to which international bodies such as the United Nations Environment Programme and the International Labour Office are beginning to turn. If universities fail to come up with courses appropriate to such development strategies, they may well find that the "problem" of having too many foreign students, has solved itself with the custom being taken elsewhere.

ersities, which have been kept
by their PGCE population fairly
in order to allow for growth.
Secondly, "target" figures for
a master for courses in universities
in target areas like teacher education,
is bound to be close consulta-
tion with the University Grants
Committee and DES, but the
of the former should not be
out of account.

Sincerely,
MAN HAYCOCKS,
Academic Secretary,
University Council for the
Education of Teachers.

the response to my letter and the information about needs and communications committee encouraging, and I feel I can seek support for the same mind originally: the sense of an association of some kind. The media studies association is engaged in these studies. Inappropriately, a title to present initials (MASS) could, I think, be a very useful project. Those interested would write me, I am prepared to write other volunteers, towards the next meeting, possibly in September.

Sincerely,
BRENAN,
Road, Sale,

During the preceding decade we had above all witnessed improvements in the staffing of the area, and in particular in the employment of professional staff. With staff costs thus absorbing a rising share of the budget, the funds available for the purchase of library materials have been further reduced by the rising prices of books and periodicals. And, paradoxically, this is happening when, at the tail end of a building boom which had totalled nearly £40m in England and Wales in the period 1967-73, the demand for public libraries

The growth patterns of university libraries have long been known. The Parry Committee devoted a chapter to library buildings, and when the UGC previously put forward norms, these never implied that there should be finite and fairly tightly drawn limits to the growth of the book stocks of university libraries.

And over and above the acquisition of books and periodical material, the B.L.I. has recently — though on a modest scale — embarked on

(1) Excl cost of accommodation etc.
(2) 1973/74.
(3) Estimated.
(4) Excluding Rent Rates, etc.

...duplicate existing collections? Is there, for example, still a case for more than one major collection of the publications of foreign governments and international organizations in central London?

Finally, is it realistic—and even economic—for the national inter-library loan system, to have to rely increasingly on supply from a single source? The academic library system contains not only major research collections in the ancient and the great civic universities but also pockets of excellence in many smaller

Collections which have been built up over the years have "profiles" which relate to teaching and research in particular institutions. Of course, libraries contain dross and the frozen lava of extinct volcanoes representing abandoned lines of research, but the value to scholarship of being able to feed from the living stream of material available locally and speedily is incalculable.

BOOKS

A maker of stories

Reputations won late

**Holy
wedlock**

For the beginner student

Major poets anthologized

This censor fail to become a standard text at undergraduate level? The book is reasonably priced and has more than minimal notes. The only rival is Donald Davie's long-established *Late Augustans* anthology (Hemlock), which in a sense is no rival because it is a selection of texts, rather smaller, though its introduction and notes are fuller and more helpfully informative. And yet Davie's book confirms my slight disappointment at the Everyman volume since it does at least show students that there were other poets than Swift, Pope, Gray and Collins in the century: good ones, too. Pollard's anthology makes excellent business sense, but it is, ordinary. An oppor-

Andrew Sanders

Douglas Brooks-Davies

Andrew Sanders

BOOKS

Industrial survey

Industries in the Southern African
by Percy Selwyn
Croom Helm, £6.95
ISBN 0 85664 277 0

Percy Selwyn has written a very clear exposition of the problems of industrial development in Southern Africa. The Southern African philosophy consists of the three former provinces, now Botswana, Lesotho and Swaziland, which he distinguishes from the South African homelands. His approach is that of the development economist, sensitive to the spiritual and political dimensions of the subject.

After reviewing the problems facing "small" countries in the context of theories of economic development, the author sets out his own "eclectic model" for understanding the small country problem. This outlines influences which combine to perpetuate the low levels of industrialization of peripheral regions. Botswana, Lesotho and Swaziland are then studied in relation to the area that dominates them. He discusses in particular the impact of South Africa's policies for the protection of local industries and since 1948, the development of industries in the homelands to further economic development. Both policies have helped keep the level of industrialization in the three countries low.

This study is based on a survey of 45, mostly industrial, concerns operating broadly along western and excluding small, craft and service enterprises. They employed over half of the recorded industrial workers in the three countries. In spite of severe data problems, the author produces a coherent picture from the records of interviews with the managers of these concerns supervised by others with local officials and bankers. Questions were aimed at structure, markets, technology and location of the concern compared with a reference area possessing the characteristics of a "core" region with high levels of attraction for economic

Regional relevance

Prologue to Perón: Argentina in
Depression and War, 1930-1943
edited by Mark Fallick and Ronald
H. Dolnick
University of California Press, £9.10
ISBN 0 520 02874 0

Most collections of essays on Latin America are of acceptable academic quality but they are very rarely properly thematic. The reason for this is simply that the amount of primary research being done is still relatively low (and is likely to decline in the future as universities deem exotic). Editors must therefore grab what they can in the hope that the loose notion they started out with will somehow turn into an exception to the rule. Textbooks are rhymed are generally maintained in this way, usually at the expense of the quality of their contents. In this case this book is rather unusual in that it is not a textbook but a collection of essays.

It is a pity that the interest of historians interested in the nationalistic response of non-industrial countries to the state after 1930. These will be few in number although, to the extent that they are ignorant of the extent to which they may be satisfied by the empirical if not the comparative content of this book.

Inevitably, however, its principal readership will consist of specialists interested in some related aspect of Argentine history. Peronism and they are likely to be disappointed since few of the papers provide too much space is given to derivative summaries of established (such as immigration, regional inequality, foreign capital, demand for foreign markets, electoral fraud and the role of extortions) without any continuation or refutation of them on the basis of primary sources.

There are two exceptions to this. The papers by Villanueva and MacQuitty are closely argued, and research pieces which use primary data in a convincing fashion.

Walter Little

Christopher Bogra

After independence

Readings on Malaysian Economic
Development
edited by David Lim
Oxford University Press, £15.75
ISBN 0 19 580283 7

These readings open with an introductory chapter by David Lim in which some of Malaysia's development problems are set out. The remaining 28 readings follow in seven groups under the headings of the export sector, agricultural development, the unemployment problem, distribution of income and wealth, human factors in economic development, and finally money and finance.

Although the coverage appears all-embracing, one is left at the end with a feeling that this volume is of little help in understanding the political economy of post-independence West Malaysia (the readings rarely mention East Malaysia). From this point of view some of the most interesting papers are the most interesting, particularly that by Purcell on employment patterns in rural areas and those by Subgrass and Thillainathan which discuss actively the measurement of and policies towards inequality. But even these have their limitations. A paper by Subgrass concludes that there has been increasing inequality in the distribution of personal income (and still more of total private income) since 1957, yet its analysis stops short in 1970, and Thillainathan's does not provide a satisfactory analysis of the Malaysian government's new economic policy adopted since the May 1969 riots.

Nor is there much in the volume to excite the imagination of the volume interested in the conventional approach to economic development. In Thoburn's two reprinted pieces on the export sector, some interesting implications for methods of project

evaluation are pointed out, but the papers on the manufacturing sector by Hoffman and Tan, Johns and Lim, the means of capital intensity pay scant regard to the "capital theory" debate.

There are errors both of content and commission in this volume. Some of the errors are of a minor nature, such as the misquoting of Sweeney and Hirschman by Sweeney. More serious, however, is the misquoting of the debate between Partridge and Wilder on "Non-economic factors in the Economic Retardation of Rural Malaysia". The latter is an adequate treatment of an important topic than Wilson's book. A paper on money and finance could have been omitted without loss.

Of the articles reprinted, two by Rudin, first published in 1970 and 1971, are useful insights into the development of Malaysia, particularly in relation to the development of the rubber sector. But generally the volume provides a satisfactory survey of Malaysia's economic development. There is too little discussion of demographic changes, labour migration, foreign investment and the problems of restructuring the economy, and no mention of the effects on Malaysia of the reversion of Malaya to the United Kingdom. It is still no book on Malaysia's political structure compared with that given by Brett on Uganda or Kenya, and Frank on Zaire.

Although the new papers, although of the reprints, are sufficient justification for the volume to buy these readings, students will find the book almost £10.00 worth while.

Chris Elnett

Change in Chile

The Growth and Structure of the
Chilean Economy
by M. J. Mammalakis
The University Press, £11.20
ISBN 0 300 01860 6

Obviously a technical analysis of Chile's economic history, though well beyond the level of first-year university students, this volume is highly political without providing a rigorous historical analysis of Chile's political economy.

The author suggests that his work confirms the usefulness of his chosen theoretical framework—a "greatly expanded" orthodox development economics approach. But although some of the concepts and terminology employed (e.g. "sectoral changes" and "lumpenproletariat") might be mistaken for a new or alternative framework, the new or important dimension of theory emerge.

The perspective is explicitly conservative, with criticism of leftist and Marxist analysis of the Popular Unity (PU) government occurring in an important place. It is the manner in which this is carried out which draws my attention. Analysis of the pre-1970 period is conducted so as to condemn from the beginning the PU's policy measures, while other technical observations and conclusions are left but an apology for the military seizure of power. While frequent reference is made to the political nature of the PU government (branded pejoratively as "communist"), that of the junta is left unqualified, if not disguised.

A quote from the chapter on the "Service Sector" illustrates the point. "Some of the services and, especially by any standard, the police, the military, and all those segments that guarantee institutional freedoms and rights, have been preserved throughout 1930-70. In order of order radically between 1970 and 1973, a 'bureaucratic pattern' was reversed after September 11, 1973, by the military which applied extremely strict and strong rules of law and order." Nowhere does Mammalakis concede that the Junta

changed the definition of law and order in Chile to the detriment of civil liberties, have diagnosed political parties and trade unions are prescribed, and human rights transgressed.

Moreover, Mammalakis would us to believe that the PU and the military junta destroyed the political system. In the chapter summarizing his analysis of the information we are treated to following gratuitous statements with no supporting details: "The military, the pride of Chile, transformed from so often shadowed by the full-scale collapse of the battle between the PU of the left and the rest of the nation between 1970 and 1973."

Prejudice seems the likely explanation for Mammalakis's view of Chile's recent economic development. There is no serious attempt to interpret the interrelationship of economic and political factors in the strategy of the PU (personally, I would not recommend the book to anyone for whom one of these is a pre-condition for the other, if not contempt). It adds the attempt in each chapter to take up the Marxist challenge, which is tempting to suggest that a more appropriate title for the book would be *Growth and Structure of the Chilean Economy: an anti-Communist Manifesto*.

Had the author had common sense to incorporate his political views into his theory he might have provided a more convincing account of the "inequalities" and "imbalances" he decries in Chile's growth and its failure to develop. Inadequate technological change, inadequate infrastructure, inadequate and other internal factors are given as symptoms rather than adequate explanations. A political economy approach might have penetrated somewhat deeper.

Nevertheless, read with a critical eye, much of the illuminating economic analysis is useful and useful for any political or economic student. The book will be disappointed in its failure of referring to original sources many too many times. It is not a book on Chile, a compilation of statistics with some commentary and comment by the author.

J. A. Zammit

Biomaths

Biomathematics: An Introduction
by David Machin
Macmillan, £2.95
ISBN 0 333 18080 1

Introduction to Mathematical
Biology
by S. L. Rubnow
Wiley, £13.55
ISBN 0 471 74446 8

Traditionally biologists have had little contact with mathematical analysis and appreciation of complex systems was their discipline. Konrad Lorenz, for example, boasted that he had never drawn a single graph. Even today many biologists have had only limited contact with the mathematics needed to describe their results, to develop a model or to generate predictions from it. The more rests on the biologist to have the initial ideas and sufficient awareness of the assistance that can be obtained from mathematics, since the mathematician is typically even less knowledgeable about biology, than the biologist about mathematics.

David Machin is an exception to this generalization for *Biomathematics: an introduction* shows a familiarity with biology. It is an inexpensive text from which the biology student can acquire facilities with a wide range of basic mathematics and some applications in biology. The material covers indices and logarithms, algebraic functions, the binomial expansion, elementary differential and integral calculus, matrix algebra and determinants. The majority of these topics are discussed clearly and illustrated by worked examples. The text does not suffer from that obsession with mathematical rigour which would have discouraged the biologist.

My principal reservation is that for the biological applications the text concentrates on the empirical model for which some mathematical support appears to be the data. While the usefulness of this approach is well illustrated, the reader is deprived of that elation, or illusion, of success when, in a creative process, some initial suggestions are used in a theoretical model whose predictions then agree with the observable behaviour of the system. However, careful coverage of the range of mathematical topics and the level of presentation will make this book valuable as a text for courses in basic mathematics for biology undergraduates, since its minor deficiencies can be made good in the lectures.

The set of topics chosen by Machin is almost identical with that which is assumed by Rubnow as the mathematical background of the reader. In *An Introduction to Mathematical Biology* and which is summarized in the preface. From this foundation the author proceeds to expand upon both a range of mathematical approaches and of a number of specific areas of biology, giving examples in his text and problems for the reader to solve.

It is a remarkable achievement. The author has integrated an exposition of increasingly more advanced mathematics while discussing successively cell growth, enzyme kinetics, tracer movement, fluid dynamics and diffusion. In the first chapter, for example, while introducing the solution of differential equations, initial conditions, general and particular solutions, semi-log paper, least squares fitting and regression analysis, simultaneous differential equations and oscillations, Rubnow simultaneously describes binary fission, exponential growth and decay processes, nutrient cells, logarithmic growth of *Paramecium*, a eucaryote, the chemostat and the turbidostat, prey-predator interactions, mutation and reversion, and numerous other topics from biology.

This work, developed from a course given to the Graduate School of Medical Sciences of Cornell University, communicates a fascinating approach to a discipline somewhere between mathematics and biology. It is not a textbook for biologists; there are probably several places where the reader will need to consult a maths book or the nearest mathematician. But so much the better for it shows his interest in the subject and will equally likely feel impelled to pursue further the biology.

David Aikman

An Aristotelian and a Copernican

Copernicus, Yesterday and Today
edited by A. Beer and K. Strand
Pergamon, £25.00
ISBN 0 08 017378 2

Kepler, 400 Years
edited by A. Beer and P. Beer
Pergamon, £75.00
ISBN 0 08 017879 3

Copernicus overruled Ptolemy's geocentric system and died the same interval before his opponent Martin Luther's death or Tycho Brahe's birth. Thirty years later Kepler was born and he survived till past the middle of Descartes's life. So the Middle Ages turned into modern science. In 1972 a conference in Washington celebrated the five hundredth anniversary of Copernicus's birth and volume 17 of the *Vistas in Astronomy* series is a record of its proceedings. The Kepler volume is more ambitious, for the four hundredth anniversary of Kepler's birth was marked by 16 international conferences. The 1,000 pages of volume 18 contain full English texts of the proceedings at Philadelphia, Leningrad, Graz, and London, Paris, Berlin and Exeter, together with a number of specially written articles and summaries of the other more important contributions.

Both men are now seen to have their own kind of universality. Kepler had this at the time; he contributed to computation, optics, crystallography, astronomy, pure mathematics and celestial mechanics, not to mention astrology and alchemy. In Copernicus it is rather as seen by modern men; his one great suggestion that the planets might be described better as moving round the sun than the earth (although not his alone) was like the fall of an intellectual Bastille. No matter if there were really no prisoners inside, it was the end of one era of authority and the beginning of a new one, perhaps no less burdensome, but still in favour.

My principal reservation is that for the biological applications the text concentrates on the empirical model for which some mathematical support appears to be the data. While the usefulness of this approach is well illustrated, the reader is deprived of that elation, or illusion, of success when, in a creative process, some initial suggestions are used in a theoretical model whose predictions then agree with the observable behaviour of the system. However, careful coverage of the range of mathematical topics and the level of presentation will make this book valuable as a text for courses in basic mathematics for biology undergraduates, since its minor deficiencies can be made good in the lectures.

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Authority is not the word, though, according to John North's contribution. While the astronomical knowledge of the early Middle Ages—before the eleventh century—was pitiful, and those of the early Fathers who knew better Greek sources were more concerned with finding a cosmology consistent with the Scriptures than with real inquiry, there was no all-pervading Church dogma. But if man saw himself as a degraded creature whose only hope lay in penitence, what is more irrelevant than the motion of the planets? And of course the Church monopoly of academic instruction. New learning began to flood in the twelfth century, but it came in company with the original Aristotle. His genius could convince men of the power of reason but, in the hands of Aquinas, of reason misapplied to construct one *a priori* structure to house both God and the universe. The prison of reason is less easy to break out of than that of faith.

Copernicus begins the *De Revolutionibus* by summarizing Aristotle's cosmology; he accuses that each body has its natural motion—the objects of the sublunary regions having rectilinear motion, those of the celestial regions continuous circular motions.

But Copernicus finds this inadequate in one detail: the Earth should not be placed in the centre of the elements but in the celestial regions, to partake of the natural circular motions. But for this one departure, argues North, Copernicus was a good Aristotelian, even rejecting Ptolemy's principle of the equant (according to which the motion of a planet was not uniform with respect to the Earth at the centre of the deferent circle, but with respect to another point, the equant and the Earth was not the centre either). Copernicus's such motions were not uniform and so must be rejected. Yet from the twelfth century astronomy was not exclusively Aristotelian. The *Aristoteles*

was translated twice (once directly from the Greek) in the middle of the twelfth century, and so were various useful Arabic works. Astronomical tables circulated freely, spherical trigonometry was well understood by the early fourteenth century, and we have, of course, many instruments of both observation and calculation.

So wherein lies Copernicus's greatness? North sums it up well: "Admittedly Copernicus's creative powers ranged less freely than Ptolemy's. The second order epicycle was a far more conservative construct than was Ptolemy's equant, and yet each was the result of thought processes which were almost unknown in medieval Europe, where epitomes of the *Aristoteles* tended to give only Ptolemy's conclusions."

And the three great figures of the following century, Giordano Bruno, Kepler and Galileo, were all in their different ways, Copernicus's successors. But the Copernican revolution, though five times the size of less of an integrated whole and contains many short notes of adulation adding little to our knowledge.

Kepler was destined to be a Lutheran theologian, but (because he had become an embarrassment?) he was sent to teach mathematics in Graz at 23, and he had time to study Copernicus. Here he produced his theory relating the planetary orbits and the five Platonic polyhedra, and to this period belong, for example, the ingenious combination of geometry, trigonometry and algebra to prove that the three kinds of regular heptagon inscribed in a unit square (two re-entrant ones) have sides which are roots of a certain cubic.

But his Protestant position became untenable after the return of the Catholics to power and he accepted Tycho Brahe's invitation to Prague. The idea was to assist in the new planetary tables, but on Tycho's death, with collaboration just begun, Kepler found himself at

30, Imperial Mathematician. This was the opportunity (with the help of Tycho's observations) for the "War on Mars". Kepler's "revolution" was to find, after much tedious calculation, that whatever else might be right in existing astronomical theories, the idea that the planets moved with constant speed was not. From the viewpoint of philosophy of science this was Kepler's great contribution: for it emphasized as a *sine qua non* of any theory the quantitative agreement with observation. For astronomy, of course, there was much else besides: the eventual discovery after many wrong turnings of the elliptical orbits and the law of areas. Though Kepler thought of himself as a Copernican, only the moving earth remained of the earlier system.

Twelve years was to be spent in a variety of investigations—concerning optics, the measurement of wine-casks—until the *Harmonice Mundi* of 1618 which contains the third law, that the square of the periodic times of the planets are as the cubes of the semi-major axes. It was the 70 years before Newton revealed the importance of this law; but the book had appeared only four days after the deforestation of Prague, and Kepler's last 12 years were overshadowed by the Thirty Years War and illness. None the less his work on the Rudolphine tables was aided by logarithms, to which Kepler made substantial contributions. (Kepler knew Napier's work but his own book appeared at the same time as Briggs.)

As befits Visitas in Astronomy both his books have magnificent series of illustrations which add much to the value of the text. But whereas the Copernicus volume reads very much as a whole and presents a rounded view of the man and the Copernican revolution, the Kepler book, though superbly illustrated, is essentially an "observatory coffee-table" book.

C. W. Kilmister

Adopting the mechanistic approach

Introduction to Organic Chemistry
with a Student Solution Supplement
by A. Streitwieser Jr and C. H. Heathcock
Collier Macmillan, £13.75 and £3.25
ISBN 0 02 418010 6 and 418040 5

Of the writing of introductory textbooks on organic chemistry there seems to be no end, and here is yet another. Some justification is needed, and the authors are open about it, stating that they have found all others to have some "important limitations for instructional use."

This is a major new textbook developed from the teaching of a one-year course in the University of California, Berkeley. If the book reflects the course, it has been constructed with much attention to detail, giving a very thorough grounding in a mechanistic approach to chemistry. It is a little surprising that the authors also consider this intensive approach suitable for remedial students and those reading the biological sciences. To this end reference is made to reactions and products of biological relevance, and the technique of systematic nomenclature has been emphasized by incorporating a section on this for each functional group.

The authors have chosen to emphasize resonance structures rather than molecular orbital theory, believing the role of the latter in introductory courses should be limited. They are equally anxious to give the student the feel of the chemicals under discussion by referring to the yield of products and some of the experimental details of preparations, and in this they are to be strongly commended. The price of the book is that students have little idea of the physical state and the ease of handling of organic chemicals.

John Biggs

From Streitwieser's previous work it is not surprising to find a careful treatment of atomic and molecular orbitals, presented in non-mathematical form for the general student, and he has included three-dimensional plots of wave functions and electron densities from one of his previous texts, and here presented with great clarity. Indeed, the whole standard of the illustrations is high, and computer graphics have also been used for the molecular orbital plots. The book is a very thorough grounding in a mechanistic approach to chemistry. It is a little surprising that the authors also consider this intensive approach suitable for remedial students and those reading the biological sciences. To this end reference is made to reactions and products of biological relevance, and the technique of systematic nomenclature has been emphasized by incorporating a section on this for each functional group.

Despite this it must be admitted that the introduction to the concept of an atomic orbital, and of the formation of hybrid orbitals, is not as easy to follow as in some other texts where a more pictorial approach has been adopted.

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lieving the role of the latter in introductory courses should be limited. They are equally anxious to give the student the feel of the chemicals under discussion by referring to the yield of products and some of the experimental details of preparations, and in this they are to be strongly commended. The price of the book is that students have little idea of the physical state and the ease of handling of organic chemicals.

Teachers will apply other touchstones in judging this basic text: new theoretical concepts are introduced as required rather than presented as an indigestible lump at the beginning. Thus stereochemistry, chirality and the sequence rules are introduced at an early stage, followed by the chemistry of the alkyl halides, organometallic compounds, alcohols, ethers and aldehydes. Only then is the chemistry of alkenes and alkyenes tackled; aromatic chemistry is left relatively late and the orientation of electrophilic aromatic substitution is deferred even further, when it is developed in terms of intermediate state theory and partial rate functions.

Nmr and infrared spectroscopy, mass spectrometry (labeled spectroscopy) and ultraviolet spec-

troscopy are introduced in separate chapters at intermediate stages as the text develops; unusually carbonyl compounds, carboxylic acids and aromatic chemistry, and particularly aromatic carbonyl compounds and phenols are treated quite separately from their aliphatic counterparts.

The book ends with a chapter of special topics and with a most useful introduction to the chemical literature.

There are one or two black marks. There is a tendency to introduce terms without defining them when a reader will not always correctly deduce their meaning (eclipsed, staggered, London force and NMR are examples). The term pyrolysis, rather than thermolysis, has been used, and they have consciously chosen to retain carbonium ion rather than carbocation. A wrong mechanism for the benzenoid rearrangement is given.

John Biggs

Problems are presented at the end of each chapter, and the Student Solution Supplement provides answers worked out in such detail that no student need have recourse to a lecturer for further explanation.

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Health care systems

Health Care: An International Study, edited by Robert Kohn and Kerr L. White, is published by Oxford University Press at £10.00. It is an examination of the performance of various political and organizational arrangements for the provision of health care in twelve selected population groups in seven countries in Europe and the nearest physical, social and economic Region is one of the areas studied; the others are in Argentina, Canada, Finland, Poland, the United States and Yugoslavia. Thirty contributors, drawn from the areas of medical care, epidemiology, social sci-

ence and statistics have helped to write the book.

A household interview survey of about 50,000 people collected data on personal and family characteristics, the perception of illness and its severity and use of the health services and attitudes towards them. Individual chapters cover the use of the physician, services, hospital services, dental and vision services, prescribed and non-prescribed medicines, and give a comparative picture of the use of these services. Appendices describe the study areas and their health care systems.

Among this week's reviewers

David Aikman lectures in the school of Biological Sciences at the University of East Anglia. He is author of *L'Estetica Dell' Osceno* and is in the school of English and American studies at the University of East Anglia. John Biggs lectures in organic chemistry at the University of Hull; G. M. Carstairs is vice-chancellor of the nearest physical, social and economic Region is one of the areas studied; the others are in Argentina, Canada, Finland, Poland, the United States and Yugoslavia. Thirty contributors, drawn from the areas of medical care, epidemiology, social sci-

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University of Sarajevo
Salary: minimum of 4,570 New Dinars per month non-graduates with at least 2 years' relevant experience. Formal TEFL qualification desirable.
Benefits: free furnished accommodation; overseas allowance; special project allowance. One-year contract, probably renewable. 76 AU 30-60

Course Tutor and Materials Designer (Saudi Arabia)

King Fahd University (Communication Skills in English Project), Dammam
To teach English Language and to prepare course materials for students in the Faculty of Medicine, Agriculture and Architecture.
Candidates, men only, single or unaccompanied (because of accommodation restrictions), must have appropriate qualifications and experience and an interest in ESP.
Salary: £4,797-£5,817 pa; no local taxation.
Benefits: free furnished accommodation; overseas allowance; special project allowance. One-year contract, probably renewable. 76 AU 110

UNIVERSITY OF WESTERN AUSTRALIA

Perth

VICE-CHANCELLORSHIP

The University is seeking a successor to the late Professor R. F. Whelan, the present Vice-Chancellor, who is taking up the post of Vice-Chancellor of the University of Liverpool in January 1977.
Persons interested in the post or who wish to suggest names for consideration are invited to write under confidential cover to the Chancellor, University of Western Australia, Nedlands, Western Australia 6149, who will be pleased to supply further information about the University.

AUSTRALIA

UNIVERSITY OF MELBOURNE

ADRIAN MYER CHAIR OF COMMERCE AND BUSINESS ADMINISTRATION
Applications are invited for the post of Professor in the Faculty of Commerce in the Department of Commerce. The successful candidate will be expected to lecture and supervise in commerce studies to students up to Honours level. Candidates should preferably have a degree in Commerce and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

UNIVERSITY OF NIGERIA NSUKKA

DEPARTMENTS OF: VETERINARY ANATOMY, PHYSIOLOGY AND PHARMACOLOGY; VETERINARY PATHOLOGY; MASS COMMUNICATION; ESTATE MANAGEMENT; CIVIL ENGINEERING; STATISTICS; ECONOMICS.

(1) DEPARTMENT OF VETERINARY ANATOMY, PHYSIOLOGY AND PHARMACOLOGY
POSTS: (a) Professor—Vet. Anatomy/Physiology (b) Senior Lecturer—Vet. Anatomy/Physiology (c) Lecturer—Vet. Anatomy/Physiology

(2) DEPARTMENT OF VETERINARY PATHOLOGY
POSTS: (a) Professor—Vet. Pathology (b) Senior Lecturer—Vet. Pathology (c) Lecturer—Vet. Pathology

(3) DEPARTMENT OF MASS COMMUNICATION
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(4) DEPARTMENT OF CIVIL ENGINEERING
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(5) DEPARTMENT OF STATISTICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(6) DEPARTMENT OF ECONOMICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(7) DEPARTMENT OF ESTATE MANAGEMENT
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(8) DEPARTMENT OF PHYSIOLOGY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(9) DEPARTMENT OF ANATOMY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(10) DEPARTMENT OF PATHOLOGY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(11) DEPARTMENT OF COMMUNICATIONS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(12) DEPARTMENT OF CIVIL ENGINEERING
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(13) DEPARTMENT OF STATISTICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(14) DEPARTMENT OF ECONOMICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(15) DEPARTMENT OF ESTATE MANAGEMENT
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(16) DEPARTMENT OF PHYSIOLOGY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(17) DEPARTMENT OF ANATOMY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(18) DEPARTMENT OF PATHOLOGY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(19) DEPARTMENT OF COMMUNICATIONS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(20) DEPARTMENT OF CIVIL ENGINEERING
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(21) DEPARTMENT OF STATISTICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(22) DEPARTMENT OF ECONOMICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(23) DEPARTMENT OF ESTATE MANAGEMENT
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(24) DEPARTMENT OF PHYSIOLOGY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(25) DEPARTMENT OF ANATOMY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(26) DEPARTMENT OF PATHOLOGY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(27) DEPARTMENT OF COMMUNICATIONS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(28) DEPARTMENT OF CIVIL ENGINEERING
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(29) DEPARTMENT OF STATISTICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(30) DEPARTMENT OF ECONOMICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(31) DEPARTMENT OF ESTATE MANAGEMENT
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(32) DEPARTMENT OF PHYSIOLOGY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(33) DEPARTMENT OF ANATOMY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(34) DEPARTMENT OF PATHOLOGY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(35) DEPARTMENT OF COMMUNICATIONS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(36) DEPARTMENT OF CIVIL ENGINEERING
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(37) DEPARTMENT OF STATISTICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(38) DEPARTMENT OF ECONOMICS
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(39) DEPARTMENT OF ESTATE MANAGEMENT
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

(40) DEPARTMENT OF PHYSIOLOGY
POSTS: (a) Professor (b) Senior Lecturer (c) Lecturer

UNIVERSITY OF NAIROBI-KENYA

LECTURER

(2 Posts)

IN THE DEPARTMENT OF ZOOLOGY

Applications are invited for the post of Lecturer in the Department of Zoology. The successful candidate will be expected to lecture and supervise in zoology studies to students up to Honours level. Candidates should preferably have a degree in Zoology and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

THE UNIVERSITY OF THE SOUTH PACIFIC

DIRECTOR-GILBERT ISLANDS CENTRE

(Post 76/51)

Applications are invited for the post of Director of the Gilbert Islands Centre. The successful candidate will be expected to lecture and supervise in Gilbert Islands studies to students up to Honours level. Candidates should preferably have a degree in Gilbert Islands studies and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

BRADFORD

THE UNIVERSITY OF BRADFORD

LECTURER IN ECONOMICS

Applications are invited for the post of Lecturer in the Department of Economics. The successful candidate will be expected to lecture and supervise in economics studies to students up to Honours level. Candidates should preferably have a degree in Economics and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

BUCKINGHAM

ADMINISTRATIVE ASSISTANT IN THE INDUSTRY

Applications are invited for the post of Administrative Assistant in the Industry. The successful candidate will be expected to assist in the administration of the Industry. Candidates should preferably have a degree in Industry and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

EXETER

THE UNIVERSITY OF EXETER

TEMPORARY TUTORSHIP IN

Applications are invited for the post of Temporary Tutorship in the Department of Economics. The successful candidate will be expected to assist in the teaching of economics to students up to Honours level. Candidates should preferably have a degree in Economics and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

UNIVERSITY OF YORK

Department of Economics and Related Studies

Lectureship in Social and Economic Statistics

Applications are invited for the post of Lectureship in Social and Economic Statistics. The successful candidate will be expected to lecture and supervise in social and economic statistics studies to students up to Honours level. Candidates should preferably have a degree in Social and Economic Statistics and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

BANGOR

UNIVERSITY COLLEGE OF NORTH WALES

DEPARTMENT OF

Applications are invited for the post of Lecturer in the Department of Economics. The successful candidate will be expected to lecture and supervise in economics studies to students up to Honours level. Candidates should preferably have a degree in Economics and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

UNIVERSITY OF THE WEST INDIES

TRINIDAD

LECTURER/ASSISTANT LECTURER IN BOTANY

Applications are invited for the post of Lecturer/Assistant Lecturer in the Department of Botany. The successful candidate will be expected to lecture and supervise in botany studies to students up to Honours level. Candidates should preferably have a degree in Botany and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

BATH

THE UNIVERSITY OF BATH

SCHOOL OF BIOLOGICAL

RESEARCH OFFICER IN PLANT SCIENCE

Applications are invited for the post of Research Officer in the School of Biological Sciences. The successful candidate will be expected to assist in the research in plant science. Candidates should preferably have a degree in Plant Science and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

HULL

THE UNIVERSITY OF HULL

DEPARTMENT OF COMPUTER STUDIES

Applications are invited for the post of Lecturer in the Department of Computer Studies. The successful candidate will be expected to lecture and supervise in computer studies to students up to Honours level. Candidates should preferably have a degree in Computer Studies and/or a related discipline. An interest in international management studies will be an advantage. The salary scale for this position is £2,400-£3,400 per annum. Further particulars and an application form may be obtained from the B.O. Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HA, to whom applications should be submitted not later than 20th August 1976.

